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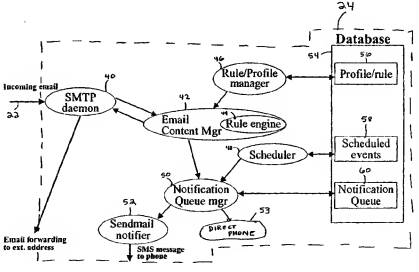
(54) Title: ENTERPRISE MESSAGING SYSTEM AND METHOD




(57) Abstract: The enterprise messaging system in accordance with the invention is an electronic message forwarding, distribution and management system (20). Using a set of rules developed by a user (44, 46, 56), the system determines an appropriate action to take for a particular electronic message. For example, the actions may include forwarding an urgent electronic message (134) to a pager (30), blocking electronic messages (132) from certain sources such as junk email senders, forwarding electronic messages from a predetermined list of senders (136) to a first email account, and forwarding electronic messages from another predetermined list of senders to another account.

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# ENTERPRISE MESSAGING SYSTEM AND METHOD

## Background of the Invention

This invention relates generally to a system and method for routing various types of electronic messages and in particular to a system and method for electronic message forwarding and message management.

The use of various forms of electronic messages, such as electronic mail (e-mail), facsimiles, or electronic voice mails has increased exponentially in the last couple of years. Often, electronic messages have become the preferred method for communicating with a lot of people. People often want to be able to forward these electronic messages to one or more different mail-boxes depending on where the individual may want to read and respond to the message. For example, an individual may want to, after work, forward all of his/her electronic messages to a home account. As another example, a person traveling may forward his/her electronic messages from work to a two-way pager which can display the messages so that the person may respond to the messages without having to use a modem to connect to his/her work.

Most electronically connected people may have five different electronic message accounts (one at work, one at home, one for the two-way pager, etc.). It is desirable to be able to give people a single address and then be able to filter the incoming messages between the five accounts. Thus, it is desirable to provide some system for managing the flow of electronic messages and for managing the distribution

of the electronic messages. For example, it is desirable to provide a system which may forward urgent electronic messages to a pager, block electronic messages that originate from a predetermined list of junk electronic message sources, and only forward electronic message that originate from particular sources. Thus, it is desirable to provide an electronic message management and distribution system and it is to this end that the present invention is directed.

Summary of the Invention

The enterprise messaging system in accordance with the invention may manage the flow of the electronic messages and control the distribution of those electronic messages. In particular, the system may include a list of rules, developed by the user of the system, that indicate the correct management or distribution of certain electronic messages. For example, one rule may state that an electronic messages from particular sources should be forwarded to a particular user account while other electronic messages from other sources should be forwarded to a different user account. The rules that may be developed using the system are very flexible which permits the user of the system to manage and distribute the electronic messages in a variety of different manners. For example, different rules may forward urgent electronic messages to a pager, may block electronic messages that originate from certain sources, may forward electronic messages conforming to certain criteria to one destination while forwarding other electronic messages conforming to other criteria to another destination.

The system may also preserve the identity of the source of an electronic message. In particular, the system may disguise the source of an electronic message so that a user of the system could be answering the message from a pager but the recipient sees that the message originated from the user's work account. To accomplish this, the system may convert the electronic message address from one address to another address. The system may also perform the various forwarding and distribution of the electronic messages without storing the electronic message on a persistent storage device, such as hard disk drive, so that the distribution of the messages is faster than typical systems that perform various slow disk drive operations on the message.

Brief Description of the Drawings

Figure 1 is a diagram illustrating an electronic message distribution and management system in accordance with the invention;

Figure 2 is a diagram illustrating more details of the electronic message distribution and management system in accordance with the invention;

Figure 3 is a diagram illustrating electronic message forwarding in accordance with the invention;

Figure 4 is a diagram illustrating diskless message forwarding in accordance with the invention;

Figure 5 is a diagram illustrating an example of a home page for the electronic message management and distribution system;

Figure 6 is a diagram illustrating an example of an account editing page in accordance with the invention;

Figure 7 is a diagram illustrating an example of an electronic message management rule generation page in accordance with the invention; and

Figure 8 is a diagram illustrating another example of an electronic message management rule generation page in accordance with the invention.

Detailed Description of a Preferred Embodiment

The invention is particularly applicable to an electronic mail distribution and management system using the Internet and it is in this context that the invention will be described. It will be appreciated, however, that the system and method in accordance with the invention has greater utility, such as to other types of electronic messages such as facsimiles, voice mails and the like.

Figure 1 is a diagram illustrating an electronic message distribution and management system 20 in accordance with the invention. The electronic message distribution and management system (abbreviated as EMS in the remainder of this specification) is a message forwarding, distribution and management system which permits a user to manage one or more different electronic message accounts. The EMS

20 may include a plurality of incoming electronic messages 22, shown as electronic mail (e-mail) in this example, a server 24 and one or more electronic message devices 26 that are recipients of the incoming electronic messages. In this example, the electronic message devices may include a cell phone 28, a pager 30, an e-mail account 32 and a trash can 34. The cell phone, page and e-mail account may receive the electronic messages so that the user may review and respond to them while the user may elect to throw some of the incoming electronic messages directly into the trash without reading them based on some information, such as the source or sender, in the electronic message. In accordance with the invention, the choice of which electronic message device each electronic message is forwarded or distributed to depends on a set of rules which define the action to be taken for each electronic message as described below in more detail. For example, the rules may specify that urgent emails are forwarded to the pager of the user for immediate response, emails from a predetermined list of sources or senders, such as junk email senders, are blocked and throw in the trash, emails from a predetermined list of senders or sources (e.g., personal messages) are forwarded to a free email account (at Yahoo!, AOL, etc) for later viewing and other emails (e.g., business related) from a second list of senders are forwarded to a corporate account.

As described above, the system 20 may manage, distribute and forward any type of electronic message including, for example, e-mails, digital voice mail messages and facsimile messages. As described below, the system may include an identity

preservation feature so that the actual address of the recipient is hidden from the sender even after the recipient responds to the forwarded message from a different forwarding addresses. The system may also include a diskless forwarding feature as described below that permits message forwarding and management without using a hard disk drive (e.g., completely in the random access memory of the server) thereby providing significant performance and cost advantages. Now, the architecture of the system will be described in more detail.

Figure 2 is a diagram illustrating more details of the electronic message distribution and management system 20 and the server 24 in accordance with the invention. The system may include a simple mail transfer protocol (SMTP) daemon 40 that receives the incoming messages, an message content manager 42, a rule engine 44 within the content manager, a rule/profile manager 46, a scheduler 48, a notification queue manager 50, a sendmail notifier 52, a direct phone notifier 53 and a database 54. The database 54 may include a profile/rule data 56, scheduled event data 58 and a notification queue 60. The elements shown in the diagram are preferably one or more software applications that are executed by the server's CPU and may be stored in the persistent storage and memory of the server. For example, the SMTP daemon may be a background process which runs in the background while the server is performing other functions.

The SMTP daemon 40 may receive the incoming e-mail message packets and generate the message from the incoming e-mail packets. The SMTP daemon may

forward received e-mails to another e-mail address based upon instructions from the content manager 42. The SMTP daemon may also forward all messages not being sent to another e-mail address to the content manager 42. The content manager 42 may process each incoming message using the rule engine 44. In particular, for each message, the rule engine may compare the information about the message to one or more rules/profiles, stored in the database 54 and managed by the rule/profile manager 46, to determine the appropriate action to take for the particular message. The content manager, once an action is determined, may send a new action to the notification queue manager 50 which schedules the action into the notification queue 60 stored in the database 54. The notification queue manager may also schedule scheduled events 58 using the scheduler 48. A scheduled event may include a particular message being sent to a list at a predetermined time. Based on the contents of the notification queue 60, the notification queue manager 50 may forward the message to the sendmail notifier 52 or the direct phone notifier 53 depending on the destination of the message. The notifiers 52, 53 then forward the message to the appropriate destination. Now, several examples of the rules/profiles that are used to manage incoming messages will be described.

The rules/profiles are stored in the database 54 and permit the content manager, using the rule engine 44, to process each incoming message. The rules may identify each incoming message according to various information in the message, such as

source, sender, domain name, subject text, message body text, etc., and then take the action (e.g., forwarding, distributing, deleting, etc.) specified by the rule/profile.

For example, a rule profile may state: If ((sender_name in ('Greg Kemnitz', 'Neerav Berry')) and (priority = 'Urgent')) then send to my_cell and forward to my_real_email. This profile/rule specifies that if the sender of the incoming message matches a predetermined name and the priority of the message is urgent (which may be determined based on the header of the message), then the message should be sent to the user's cell phone as an alphanumeric text page and also forwarded to the user's e-mail account.

As another example, a rule may provide: If (sender_name = 'Kjirsten Koka') then send to my_cell and forward to my_real_email. In this case, all messages which are from a particular individual may be sent to the user's cell phone and forwarded to the user's email account. In another example, the rule may state: If (to != 'Vikram Koka') then delete. In this case, the rule specified that all e-mail not from Vikram should be deleted which permits the user to filter out all other messages. In most cases, the user may also have a default rule which governs all messages not covered by other rules. For example, the default rule may be: forward to my_real_email so that all messages which do not trigger any other rules are automatically forwarded to the user's e-mail account for later review. Thus, the rules permit the user to manage the incoming messages. The rules/profiles may be generated to use a variety of different

incoming message information in order to process the messages. Now, the message forwarding feature in accordance with the invention will be described.

Figure 3 is a diagram illustrating an example of the electronic message forwarding in accordance with the invention which permits the identity of the originating location to be hidden from the recipient. In particular, for privacy reasons, recipients may not want senders to know where the recipient is responding from. For example, a user may set up a rule to forward all his messages from his boss to his mobile pager. The system permits the user to receive and respond to messages from the boss without the boss being aware that he is actually receiving and/or responding to the messages from his pager as opposed to from the office. The boss only knows that the message responses are from the user's email address (john@cellmania.com). In this way, the user does not have to reveal his pager number to the boss or that the responses are actually from the pager.

As shown in Figure 3, the messaging server 24 permits this privacy to be maintained. The server 24 handles the email from the boss, Linda in this example, to/from the user, John in this example, in the following fashion as illustrated in Figure 3. The email message from Linda at linda@corp.com is sent to John at john@cellmania.com. The server 24 reads the email, validates that john@cellmania.com is a valid user, evaluates John's rules stored in the server and processes the incoming message based on John's rules. In this example, the EMS rule engine 44 (shown in Figure 2) determines that John wants all email from

linda@corp.com to be forwarded to his pager at 12345656@pager.com. Based on the rule, the EMS content manager 42 (Figure 2) sets the From and Reply To fields of the email to be linda#_#corp.com@remail.cellmania.com. The username field is preserved so that when John gets the message on his pager, the username is Linda but the From and Reply To is the encoded email address so that it can be routed back to Linda through the server 24.

When John replies to the message, it travels back to the Sendmail daemon 40 (Figure 2) at the system 20. The Sendmail daemon 40 does a reverse lookup of 1235656@pager.com in its profile engine and determines that the mail is from John. It then decodes the destination address to linda@corp.com based on the encoded From and Reply To fields, and sets the From and Reply To addresses to john@cellmania.com so that Linda thinks that the message is being sent from John's e-mail account. The EMS 20 guarantees that the entire messaging dialog between John and Linda occurs without Linda knowing that John is replying from his pager. Now, the diskless forwarding feature in accordance with the invention will be described.

Figure 4 is a diagram illustrating the diskless message forwarding in accordance with the invention. In particular, the EMS server 24 operates without writing the incoming messages to a persistent storage device, such as a hard disk. By keeping the messages entirely in the memory of the server, the EMS system 20 is extremely fast and scalable. For example, the EMS system may be easily scaled to handle additional message load by adding more processors. In addition, since hard

disk operations are up to 10 times slower than memory operations, the EMS system 20 is much faster. Another major advantage with the EMS system 20 over disk-based messaging architectures is that the sender gets an immediate acknowledgement of success or failure of the message communication since existing message forwarding architectures that are disk based have an inherent lag time for acknowledging success or failure of message forwarding.

Using the same messaging example as shown in Figure 3, the EMS system 20 may work in a diskless fashion as illustrated in Figure 4. In particular, an email message from Linda at linda@corp.com is sent to John at john@cellmania.com. The EMS server 24 may read the email and validates that john@cellmania.com is a valid user using the profile manager 46 which in turn queries the profile data in the database 54. If the address is not a valid address, then EMS sends out a "User Unknown" response immediately. If it is a valid address, then the EMS server 24 asks the rule engine 44 for forwarding rules set by the user john@cellmania.com. The rule engine 44 may determine, based on the current rules, that John wants all email from linda@corp.com to be forwarded to his pager at 12345656@pager.com. The content manager 42 may then set the From and Reply To fields of the email to linda#_#corp.com@remail.cellmania.com and asks a delivery manager 72 to forward the message to the appropriate destination. The delivery manager may determine whether to respond to the device directly or send the message on to the Sendmail daemon for forwarding that allows for device specific forwarding protocols and

message formatting to be completed. For example, some paging providers support NNTP, TAP and other messaging protocols that are more efficient than email. In this example, all of the steps in the processing of the message are performed without writing the message or the message information to a persistent storage device which increases the overall speed of the messaging system. Now, the diskless messaging in accordance with the invention will be described in more detail.

Most conventional messaging systems tend to operate under a model in which they: 1) receive the message (after some preliminary analysis about the destination); 2) save the message to temporary disk storage; and 3) confirm receipt of the message to the sender. Then later, the conventional systems: 4) analyze the message in detail (to figure out what to do with it); 5) process the rules (if any) which apply to the message; 6) forward the message to the appropriate destination in whole or partial increments; and 7) if any errors happen during this process, create a new message (a bounce or error message) and send this back to the originator to indicate failure in processing.

Fundamentally, the steps above are based on a two step "store and then forward" paradigm. Some obvious pitfalls in this two-step paradigm is the notion of delayed asynchronous error responses which is fundamentally harder to deal with than immediate error feedback, as well as the performance (and consequent scalability) limitations of writing to disk as part of the handling of every message. To clarify the performance implications, obviously writing to disk is many times slower than writing

to RAM, and therefore far fewer messages can be processed by a single machine in a minute if it were writing to disk.

In accordance with the invention, in part because of our ability to handle the whole message in RAM, the messaging model has changed to the following: 1) receive the message; 2) analyze the message in detail (to figure out what to do with it and which rules apply to it); 3) process the rules which apply to the message; 4) forward the message to the appropriate destination(s) completely; and 5) confirm success or failure (in case of errors) to the originator. This is a far more efficient model of message propagation and scales to handle more messages better that conventional systems, because: 1) the system does not store the message within our servers disk as part of normal processing; 2) the system processes all the rules in real time; 3) the system sends the message to the remote destination(s) in real time; 4) the system get a confirmation back to the originator in real time; and 5) the system easily scales across multiple CPUs and multiple machines. In fact, the system is currently limited by the ability of the receiving servers (destinations) to handle our messages. Now, an example of a Web-based EMS system will be described.

Figure 5 is a diagram illustrating an example of a home Web page 100 for the electronic message management and distribution system. The home page permits the user to log onto the EMS system. Once logged on, the user may select from an account tab 102, a forwarding rule tab 104, an exception rule tab 106 and an about us tab 108. The account tab permits the user to specify the accounts that the EMS system is

managing, the forwarding rule tab and the exception rule tab permit the user to specify the distribution, forwarding and management rules to control the processing of the incoming electronic message and the about us tab contains information about the company that created and supports the EMS system. The home page also includes other information about the company that anyone who accesses the URL of the Web page may view. Now, an account editing page will be described.

Figure 6 is a diagram illustrating an example of an account editing page 120 in accordance with the invention. Once the user has registered for and logged onto the EMS system, the user may access this account editing page 120. The page 120 may include an account editing portion 122 and a current account display portion 124. The account editing portion permits the user to add or edit account information to which the incoming electronic messages may be forwarded depending on the rules. The account editing portion permits the user to specify an account name , an account type (e-mail, pager or phone) and an account address to to which the incoming messages may be redirected. The current account portion 124 lists the current accounts to which the incoming messages may be forwarded and distributed. Now, an electronic message management rule generating page will be described.

Figure 7 is a diagram illustrating an example of an electronic message management rule generation page 130 in accordance with the invention. In the page, the user may specify the rules which are used by the rule engine to process incoming messages. The page may include a blocking rule section 132, a priority message

section 134, a forwarding section 136 and a default rule section 138. The blocking section permits the user to specify the senders or sources of messages that should be throw away without reading them, the priority section permits the user to specify the senders or sources whose messages should be immediately forwarded to one of the messaging devices of the user, the forwarding section permits the user to specify the sources or senders whose messages should be sent to an account, such as e-mail, and the default section permits the user to specify what happens to all other messages not covered by the other sections. As shown in Figure 7, the user has specified that, by default, messages are sent to the user's pager. Now, another example of an electronic message management page will be described.

Figure 8 is a diagram illustrating another example of an electronic message management rule generation page 150 in accordance with the invention. In this example, the exception rules are specified which permits the user to change the normal rules in certain situations such as during a vacation. The page has the same sections 132 – 138 as above since the user may still specify new rules for the exception period. In addition, the page contains a section 152 that permits the user to specify a time period during which the exception period is effective.

In summary, the EMS system permits a user with multiple different accounts to manage the electronic messages going to each account since all of the messages are initially sent to the EMS system which then redistributes them according to the set of

rules specified by the user. The EMS system may include an identity concealment feature and a diskless messaging system feature.

While the foregoing has been with reference to a particular embodiment of the invention, it will be appreciated by those skilled in the art that changes in this embodiment may be made without departing from the principles and spirit of the invention as defined by the appended claims.

CLAIMS:

1. A system for managing the communication of one or more messages between a user and a plurality of other entities wherein the user has one or more different messaging accounts, comprising

a message manager for receiving incoming messages to the user;

a content manager for managing the incoming messages to the user, the content manager comprising means for determining the distribution of the incoming messages to the one or more messaging accounts of the user;

a delivery manager for delivering the incoming messages to one of the one or more messaging accounts of the user based on the determination of the content manager; and

wherein the communicated messages are not stored on a persistent storage device during the management of the communication of the messages.

2. The system of Claim 1, wherein the content manager further comprises a database containing one or more rules, wherein each rule specifies, based on information in the incoming message, an action to be taken with respect to an incoming message that satisfies the rule constraints and a rule manager for applying the one or more rules to each incoming message in order to determine the management action taken for each incoming message.

3. The system of Claim 2, wherein the rules comprise a rule for forwarding an incoming message to a particular messaging account based on the information in the incoming message, a delete rule for deleting an incoming message to a particular messaging account based on the information in the incoming message, an exception rule for managing the incoming messages during an exception period, and a default rule for managing an incoming message that does not satisfy any of the other rules.

4. The system of Claim 1, wherein the one or more different messaging accounts comprise one or more different messaging devices.

5. The system of Claim 1 further comprising means for disguising the source of a message so that the recipient of the message cannot determine the actual source of the message.

6. The system of Claim 5, wherein the disguising means further comprises means for encoding the actual address of the message originator in the from and reply to fields.

7. The system of Claim 1 further comprising a schedule manager for scheduling events that occur at a predetermined time.

8. A method for managing the communication of one or more messages between a user and a plurality of other entities wherein the user has one or more different messaging accounts, comprising

receiving incoming messages to the user;

managing the incoming messages to the user including determining the distribution of the incoming messages to the one or more messaging accounts of the user; and

delivering the incoming messages to one of the one or more messaging accounts of the user based on the determination of the content manager wherein the communicated messages are not stored on a persistent storage device during the management of the communication of the messages.

9. The method of Claim 8, wherein the managing further comprises applying one or more rules to each incoming message in order to determine the management action taken for each incoming message, each rule specifies, based on information in the incoming message, an action to be taken with respect to an incoming message that satisfies the rule constraints.

10. The method of Claim 9, wherein the rules comprise forwarding an incoming message to a particular messaging account based on the information in the incoming message, deleting an incoming message to a particular messaging account based on the information in the incoming message, managing the incoming messages during an exception period, and managing an incoming message that does not satisfy any of the other rules.

11. The method of Claim 8, wherein the one or more different messaging accounts comprise distributing the incoming message to one or more different messaging devices.

12. The method of Claim 8 further comprising disguising the source of a message so that the recipient of the message cannot determine the actual source of the message.

13. The method of Claim 12, wherein the disguising further comprises encoding the actual address of the message originator in the from and reply to fields.

14. The method of Claim 8 further comprising scheduling events that occur at a predetermined time.

15. A method of disguising the source of a message from an originator to a user, the method comprising:

determining a messaging account to which the incoming message is forwarded based on the originator of the incoming message;

encoding the address of the originator in the reply and from fields of a new message being forwarded to the user at the messaging account, the new message containing the incoming message from the originator;

the user generating a second new message back to the originator in response to the new message; and

decoding the encoded address in the second message so that the originator does not know that the incoming message was forwarded to a different messaging account.

16. A system for managing the communication of one or more messages between a user and a plurality of other entities wherein the user has one or more different messaging accounts, comprising

a SMTP daemon for receiving incoming messages to the user;

a content manager for managing the incoming messages to the user, the content manager comprising means for determining the distribution of the incoming messages to the one or more messaging accounts of the user, the content manager further comprising a database containing one or more rules, wherein each rule specifies, based on information in the incoming message, an action to be taken with respect to an incoming message that satisfies the rule constraints and a rule engine for applying the one or more rules to each incoming message in order to determine the management action taken for each incoming message.

a delivery manager for delivering the incoming messages to one of the one or more messaging accounts of the user based on the determination of the content manager; and

wherein the communicated messages are not stored on a persistent storage device during the management of the communication of the messages.

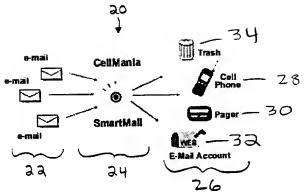


Figure 1

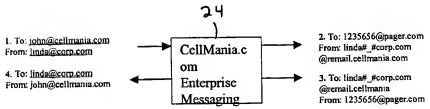


Figure 3

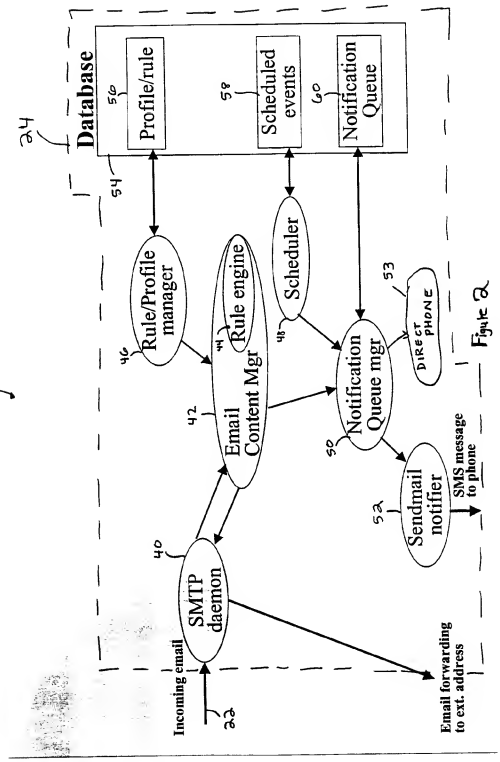
20
24
Database
56
Profile/rule
58
Scheduled events
60
Notification Queue
54
Rule/Profile manager
46
Email Content Mgr
42
Rule engine
44
Scheduler
48
Notification Queue mgr
50
53
DIRECT PHONE
Sendmail notifier
52
SMS message to phone
SMTP daemon
40
Incoming email
22
Email forwarding to ext. address

Figure 2

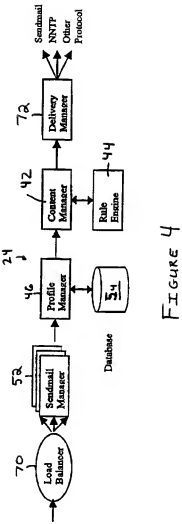
Load Balancer
70
Sendmail Manager
52
Database
Profile Manager
46
54
24
Content Manager
42
Rule Engine
44
Delivery Manager
72
Sendmail
NNTP
Other
Protocol

FIGURE 4

Cellmania.com SmartMail - Netscape
http://cellmania.cellmania.com:2301/cgi-bin/email_ui/main_page.pl
CellMania.com
100
102
104
106
108
More Info
Sign In
Username
Password
go
Tell A Friend
Enter a friend's address here
go
My E-Mail Addresses
My Forwarding Rules
Free CellMania.com SmartMail
Take control of your e-mail
• Too many email accounts to keep track of?
• Want urgent email sent to your phone or pager?
• Getting spammed?
Use your CellMania.com SmartMail account as THE ONE e-mail address to give out to people.
e-mail
CellMania
Trash
Cell Phone
Pager
SmartMail
e-mail
e-mail Account
Sign up now it's as easy as 1-2-3
1. Register here for an address.
2. Enter your existing email accounts.
3. Define your forwarding rules.
Sign Me Up!
• Free e-mail address for life stays with you even as you change Internet providers or jobs
• Screen e-mail by sender
• E-mail forwarding your e-mail messages to your phone or pager based on filters you define
• Complete privacy protection never reveal your address when you are replying from
• Works with any e-mail account!
BELLSOUTH
The Bold Voice. Yours
Find People!
Type in a name

Figure 5

CellMania - Netscape
CellMania.com
My E-mail Accounts
My Forwarding Rules
My Personal Profile
Email Accounts - My Forwarding Rules - Exception Forwarding Rules
Add/Edit Account
Account Name
(example: My Pager)
Account Type
Email
Pager
Phone
Account Address
Don't know the address of your pager or phone?
Click here for help
Current Accounts
Primary
Account
Email Address
my skytel
1234@skytel.com
(2 left)
120
122
124

Figure 6

CellMania SmartMail - Netscape
CellMania.com
My E-Mail Accounts | My Forwarding Rules | My Exception Rules | About Us
Email Accounts - My Forwarding Rules Exception Forwarding Rules
Blocking
Priority to Pager/Phone
Define list of senders to be forwarded to my phone
Forwarding
Define list of senders to be forwarded to my yahoo
Handling the Rest
Note: Click on the links to modify the list
130
132
134
136
138

Figure 7

CellMania SmartMail - Netscape
CellMania.com
Email Accounts - My Forwarding Rules - Exception Forwarding Rules
From: January 1 1999
To: December 30 1999
152
150
2 Blocking
1 Priority to Pager/Phone
Define list of senders to be forwarded to my phone
3 Forwarding
Define list of senders to be forwarded to my yahoo
4 Handling the Rest
Note: Click on the links to modify the list
132
134
136
138

Figure 8

# INTERNATIONAL SEARCH REPORT

International application No.
PCT/US00/17284

A. CLASSIFICATION OF SUBJECT MATTER

IPC(7) : G06F 13/38, 15/17
US CL. : 709/203, 206; 707/10

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

U.S. : 709/203, 206; 235, 245, 707/10; 455/461

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

INPI, INSPEC, INSIGHT CONFERENCE

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

STN EXPRESS, DIALOG CLASSIC.

C. DOCUMENTS CONSIDERED TO BE RELEVANT

| Category* | Citation of document, with indication, where appropriate, of the relevant passages | Relevant to claim No. |
|---|---|---|
| X | US 5,802,253 A (GROSS et al.) 01 September 1998, col. 8 lines 33-52 | 7, 14 |
| X<br>---<br>Y | Finnish Autonomous Internet Remailer Closed, (Newsbytes) 09 sept. 1996, pp. 2 et seq. | 5, 6, 12, 13<br>----<br>15 |
| X<br>---<br>Y | US 5,742,905 A (PEPE et al.) 21 April 1998, col.5 lines 40-61; col.6 line 1- 19; col.col.7 lines 4-15, 49-52; col.10 lines 55-65; col.11 lines 40-42; col.33 lines 11-36. | 1, 8, 16<br>--------<br>2, 3, 9, 10, 15 |
| Y | US 5,796,394 A (WICKS et al.) 18 August 1998 abstract; col.5 lines 37-52; col.11 lines 49-67; col.12 lines 1-47 | 2, 3, 9,10 |

☐ Further documents are listed in the continuation of Box C. ☐ See patent family annex.

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| * | Special categories of cited documents | "T" | later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention |
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| "P" | document published prior to the international filing date but later than the priority date claimed | | |

| | |
|---|---|
| Date of the actual completion of the international search<br>28 AUGUST 2000 | Date of mailing of the international search report<br>03 OCT 2000 |
| Name and mailing address of the ISA/US<br>Commissioner of Patents and Trademarks<br>Box PCT<br>Washington, D.C. 20231<br>Facsimile No. (703) 305-3230 | Authorized officer<br>BUNJOB JAROENCHONWANIT<br>Telephone No. (703) 305-4815 |

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